

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:  
GABLE & GOTWALS  
Attn. Johnson, Paul H.  
100 W. Fifth Street  
10th Floor  
Tulsa, Oklahoma 74103  
UNITED STATES OF AMERICA

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

RECEIVED  
SEP 10 2003

(PCT Rule 44.1)

Date of mailing  
(day/month/year) 05/09/2003

Applicant's or agent's file reference

005803.00912

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.

PCT/US 02/ 28377

International filing date  
(day/month/year)

06/09/2002

Applicant

TDW DELAWARE, INC.

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
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Authorized officer

Ka-Bo Chan

Dr. R. R. 06  
5803 912

SEP 26 2003

10/5/03 SEA Comments

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>005803.00912</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/US 02/ 28377</b>	International filing date (day/month/year) <b>06/09/2002</b>	(Earliest) Priority Date (day/month/year)
Applicant <b>TDW DELAWARE, INC.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.  
☐ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established by this Authority to read as follows:

**Method and device for detecting gases by absorption spectroscopy**

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

- ☐ as suggested by the applicant. ☐ None of the figures.
- ☐ because the applicant failed to suggest a figure.
- ☒ because this figure better characterizes the invention.

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# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/US 02/28377

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-8

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 02/ 28377

## Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A method and device for measuring a concentration of a preselected gas in a gas sample are disclosed. The device comprises a Herriott type multipass cell (10) having a centre axle (74) and a housing (80A, 80B) surrounding and spaced from the axle to provide a tubular sample cavity (84). The gas sample is pumped through the sample cavity via apertures (154, 156) provided in opposed ends of the axle. A first mirror (44) and a second mirror (46) are supported at opposed ends of the axle. A light source, e.g. a laser or LED, is provided for emitting a light beam into the sample cavity via an entry aperture (30) in the first mirror, the light beam having a wavelength at which the preselected gas strongly absorbs. The beam is reflected between the mirrors for a number of times before exiting the cell via an exit aperture (48) in the second mirror and impinging on a detector (52). The device further comprises a reference detector (32) for monitoring the intensity of the unattenuated light beam and a detector for detecting the intensity of light transmitted through the second mirror after a single pass through the cell. The light source is operatively connected to a heat control assembly having a heat sink and the gas sample is passed said heat sink to augment temperature control of the light source.

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 02/28377

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01N21/35 G01J3/42 G01N21/03 G01N21/39

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N G01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 705 816 A (RONGE CATHERINE ET AL) 6 January 1998 (1998-01-06) * column 4, line 56 - column 5, line 19; column 7, line 56 - column 8, line 25; column 10, lines 11-31; figures 1, 7, and 8 *	1-3,6-8
A	GB 2 286 458 A (MARCONI GEC LTD) 16 August 1995 (1995-08-16) * pages 3-5; figure 1 *	1-3,5,6,8
A	EP 1 070 943 A (AIR LIQUIDE) 24 January 2001 (2001-01-24) * paragraphs 25-31 and 63-66; figures 2A, 2B, and 8 *	1,3,6-8

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

21 May 2003

Date of mailing of the international search report

05.09.03

Name and mailing address of the ISA

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NL - 2280 HV Rijswijk  
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Authorized officer

Hoogen, R

# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 02/28377

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5705816	A	06-01-1998	FR 2733319 A	25-10-1996
			CN 1148173 A	23-04-1997
			EP 0738887 A	23-10-1996
			JP 9033430 A	07-02-1997
			KR 169072 B	30-03-1999
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GB 2286458	A	16-08-1995	NONE	
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EP 1070943	A	24-01-2001	US 6421127 B	16-07-2002
			JP 2001153793 A	08-06-2001
			TW 496955 B	01-08-2002
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